

**LOWER LEY CREEK SUBSITE**  
**PRP NEXUS REPORT**  
**GENERAL ELECTRIC/LOCKHEED MARTIN**  
**Court Street, Tarbell Road, East Molloy Road,**  
**and Electronics Park Facilities**  
**Syracuse, NY**

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**Compiled by:**

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## 1.0 Overview

This PRP summary document presents evidence that has been collected by the USEPA, NYSDEC, and others that demonstrates the release and/or discharge of hazardous substances to the Ley Creek Watershed and specifically, the Lower Ley Creek Subsite (including the Old Ley Creek Channel), by General Electric (GE) and Lockheed Martin (Lockheed).

GE had operations at six separate locations in the Syracuse area; however, only the following sites are discussed in this report: Court Street Facility on Court Street and Deere Road, Tarbell Road Facility at the intersection of Tarbell Road and Mantz Road, East Molloy Road Facility at 5990 East Molloy Road, and Electronics Park Facility.<sup>1</sup> (Figure 1) Operations at these facilities were transferred from the General Electric Aerospace business to Martin Marietta Corporation in 1993, followed by a merger of Martin Marietta and Lockheed Corporation in 1995 to form Lockheed Martin Corporation. Lockheed currently continues to operate at least the Electronics Park Facility. GE and Lockheed are publicly traded and viable companies.

This report documents the waste types and waste-in contributions attributable to the GE/Lockheed Facilities to the Ley Creek watershed, and provides a summary of site history and facts pertaining to GE/Lockheed's liability. This document is a summary of data and evidence produced by others. Data sources for the information presented in this document are summarized in Section 6.0 References, and select supporting figures are included in Appendix A.

## 2.0 Executive Summary

GE began operations in the Syracuse area in the mid-1940s and continued until December 1993. Operations at GE's Court Street Facility and East Molloy Road Facility were discontinued in the early 1990s with the transfer of ownership from General Electric Aerospace business to Martin Marietta Corporation and then eventually to Lockheed in 1995 when Martin Marietta Corporation merged with Lockheed Corporation. Activities conducted by Martin Marietta or Lockheed Martin at these two sites post-1993 principally included close-out and remedial efforts. Lockheed continues to operate the Electronics Park Facility and the status of the Tarbell Road Facility is not known.

The discharge of various wastewaters and other materials containing hazardous substances have been documented over time from the various GE/Lockheed Facilities including: releases to the sanitary sewer system (historically discharging to the Ley Creek Sewage Treatment Plant and ultimately to Lower Ley Creek), and releases to the storm sewer system (entering the North Branch and/or South Branch of Ley Creek, and Sanders Creek, a tributary to the South Branch of Ley Creek). Non-sewer releases of hazardous substances include soil and groundwater contamination at the Court Street Facility. Soil and groundwater contamination are potential sources and pathways for off-site contaminant migration into the Ley Creek Watershed.

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<sup>1</sup> These facilities are identified in pertinent environmental records as: Court Street Facility (EPA Facility ID NYD990763203, NYSDEC site ID #211); Tarbell Road Facility (EPA Facility ID 986972024, NYSDEC site ID #211), East Molloy Road Facility (EPA ID NYD010763290, NYSDEC site ID #214); and Electronics Park Facility (EPA ID NYD059385120, NYSDEC ID #209).

Three of the GE/Lockheed Facilities - Court Street, Tarbell Road, and East Molloy Road - are located in the Ley Creek Watershed and within 500 feet of either the North or South Branch of Ley Creek or Sanders Creek, a tributary to the South Branch. The Electronics Park Facility is not located within the Ley Creek Watershed; however, the plant historically discharged industrial and sanitary wastewater to the Ley Creek Sewage Treatment Plant which ultimately discharged to Lower Ley Creek.

The Court Street Facility used and released an array of hazardous substances, including: metals associated with electroplating and aluminum finishing and brazing, solvents, cyanide, oil & grease containing SVOCs and VOCs, and PCBs. These hazardous substances were released to soil, groundwater, sanitary sewers, and/or storm sewers. The Court Street Facility is documented to have historically released, among other hazardous substances, high levels of lead via its storm sewers to Sanders Creek and high levels of chlorinated and aromatic VOCs via its storm sewers and groundwater migration to Sanders Creek and the South Branch of Ley Creek. From 1956 to the late 1970s, the Facility also discharged extensive amounts of metals and other hazardous substances to the Ley Creek Sewage Treatment Plant which ultimately discharged to Lower Ley Creek.

The Tarbell Road Facility was located near the Court Street Facility and had a storm water discharge to Sanders Creek that limited surface water testing detected metals such as: copper, lead, mercury, and zinc.

The East Molloy Road Facility is documented to have released, among other hazardous substances, PCBs into sanitary sewers that once discharged to the Ley Creek Sewage Treatment Plant. Although the volume of discharge from this Facility was relatively small, the Facility discharged from 1976 to 1993 before a treatment system was installed to remove PCBs.

The Electronics Park Facility historically discharged large amounts of wastewater to the Ley Creek Sewage Treatment Plant (STP), reportedly accounting in the 1960s for approximately 10% to 12% of the total influent received at the STP by the county. This Facility used and released numerous hazardous substances, including: metals (copper, chromium, mercury, magnesium, manganese, nickel, lead, and zinc), solvents, cyanide, oil & grease containing SVOCs and VOCs, and PCBs. From the mid-1940s to the late 1970s, the Facility discharged extensive amounts of many of these hazardous substances to the Ley Creek Sewage Treatment Plant which ultimately discharged to Lower Ley Creek.

Due to the proximity of the GE/Lockheed Facilities to Ley Creek and the Facilities' historic use, handling and discharge/release of hazardous substances, it can be concluded that the GE/Lockheed Facilities have released hazardous substances directly and/or indirectly into Ley Creek, the North and/or South Branches of Ley Creek, and Sanders Creek. These hazardous substances include, but are not limited to, chlorinated solvents, non-chlorinated solvents, metals (chromium, copper, zinc, cadmium, nickel, lead, mercury, magnesium, manganese) cyanide, oil and grease containing VOCs and SVOCs, and PCBs. Consequently, GE and Lockheed should be given notice of their potential liability at the Lower Ley Creek Subsite by the USEPA.

### 3.0 Background

#### ***Court Street Facility & Tarbell Road Facility***

General Electric Aerospace Division began manufacturing operations at the Court Street Facility located on Court Street and Deere Road in the Town of Dewitt, NY in 1956 and continued operations until December 31, 1991. The Court Street Facility was subsequently transferred to Martin Marietta Corporation in 1993. The Court Street Facility is approximately 57 acres in size and once consisted of Buildings 2, 3, 4, 5, 5A and A, B, C, totaling approximately 550,000 square feet of building space (TAMS, 1996). Buildings A, B, and C were separately located to the east of Buildings 2 through 5A.

The Tarbell Road Facility is located adjacent to the Court Street Facility at the intersection of Tarbell Road and Mantz Road, consisting of Building 8 (TAMS, 1996). Building 8 was considered part of the Court Street complex. It is not known what year operations began at Building 8. It was initially operated by GE and transferred to Martin Marietta Corporation in 1993. Figure 1 included in Appendix A, depicts the locations of both the Court Street Facility and Tarbell Road Facility.

#### ***East Molloy Road Facility***

The General Electric Company Apparatus Service Center provided repair services for GE at 5990 East Molloy Road from 1976 to 1993. Figure 1 included in Appendix A depicts the locations of the East Molloy Facility.

#### ***Electronics Park Facility***

The Electronics Park Facility was constructed during the mid-1940s and consists of 17 separate buildings, totaling approximately 1.9 million square feet of building space, situated on 183 acres of property. (TAMS, 1996, pgs. 15). Figure 1, included in Appendix A, shows the site plan for the Electronics Park Facility.

### 3.1 Site Operations

#### ***Court Street Facility & Tarbell Road Facility***

Operations by GE Aerospace in Building B of the Court Street Facility included the manufacturing from 1958 to 1982 of ceramic parts made of powdered lead, zirconate, titanate (PZT) for use in sonar devices. Buildings A and C were used as support buildings for office space and storage. Building B was used for storage of surplus equipment after 1982. In 1991, Buildings A, B, and C, were demolished (TAMS, 1996 pg.5). Figure 7 included in Appendix A shows the former locations of these buildings on the site.

Building 2 was used as a machine shop, electroplating operation, painting lines, storage areas, tool shops, and office space. In 1976, the machine shop and plating operations were moved to GE's Farrell Road Plant. Other uses of the building after 1976 included a hydroponics operation as well as an office and computer space (Wehran, July 1991).

Building 3 contained offices and a small engineering development laboratory (Wehran, July 1991).

Building 4 housed offices and a small machine shop. In 1965, a small photography lab, offset print shop, engineering and materials laboratories, and silkscreen operation moved to Building 4 (Wehran, July 1991).

Building 5 was used for manufacturing sonar and radar equipment and printed circuit board. Previous operations also included an integrated circuit board manufacturing operation, engineering and chemical laboratories, and offices (Wehran, July 1991). Aluminum brazing and finishing operations were also conducted in this building. These operations included degreasing, metal preparatory baths, paint booths, an annealing oven, mixing hoods, welding areas, and soldering benches (TAMS, 1996).

Building 5A was used as a warehouse for production equipment, raw materials, auxiliary radar, and sonar testing and repair shop. It also housed the hazardous waste storage area for the site (Wehran, July 1991).

Operations at Building 8 consisted of refurbishment, repair, and testing operations for radar conditions. These operations were interdependent with operations at Building 5 of the Electronics Park Facility (TAMS, 1998 pg. 5).

#### ***East Molloy Road Facility***

Activities at the East Molloy Road Facility included repair of industrial motors, generators, switchgear and other electrical apparatus along with general machine shop work. Operations included disassembly of equipment, cleaning of parts (using steam, solvents, or grit blasting methods), replacement of parts, machining of parts, reassembly of equipment, painting of equipment and testing of equipment. The location of the East Molloy Road Facility can be seen on Figure 2.

#### ***Electronics Park Facility***

The Electronics Park Facility consists of four buildings that currently or formerly contained manufacturing operations (Buildings EP-5, EP-6, EP-7, EP-15), an electronics laboratory (EP-3) and a number of buildings used for administrative and support activities (EP-1,2,4,8,9,10 and 17). Various electronics components were manufactured at the Facility, including receivers, specialty products and television tubes, transmitter and semi-conductors, sonar and radar systems, and projectors (TAMS, 1996 pg. 5) (Figure 8).

### **3.2 Product and Waste Storage/Disposal Areas**

#### ***Court Street Facility & Tarbell Road Facility***

Building B at the Court Street Facility used PZT, a powered lead, zirconate, titanate compound, in the manufacturing of ceramic parts (O'Brien & Gere, Apr. 1991). Heating oil and chlorinated solvents were also used, among other things, in the Building A to C complex. (Wehren, Apr. 1993).

Buildings 2 to 5A used heating oil and gas for fuel, as well as chlorinated and non-chlorinated solvents. All of these materials were once housed in over 20 underground storage tanks scattered throughout the property (Wehren, July 1991). Operations also used a variety of other hazardous materials, including: materials associated with electroplating (cadmium, silver, rhodium, tin, gold, nickel, and zinc), aluminum brazing and finishing (cleaners, preparatory baths, paints, solvents), machining (oils, solvents, cutting

fluids), and photography/printing (solvents, ink, developing chemicals) (Wehren, Apr. 1991). The Facility also used PCB-containing materials in transformers and other electrical equipment, as well as some machine shop equipment (Wehran, Jan. 1994).

Quantities of hazardous wastes generated and disposed of prior to 1979 were not provided by GE, Martin Marietta or Lockheed. Wastes generated at the Court Street Facility were transported at times to the Electronics Park Facility for centralized pick-up by the disposal contractor. In 1981, the Court Street Facility had an interim status Hazardous Waste Storage Area, but it was only used when the Electronics Park Facility's waste storage area was not available (TAMS, 1996 pg. 6).

In 1977, GE reported the generation of the following wastes: 1,1,1-trichloroethane (TCA), mixed chlorinated solvents, non-chlorinated solvents, other chlorinated solvents, oils, copper plating and etching solutions, miscellaneous metal oxides, dilute aqueous wastes, hydrochloric acid, phosphoric acid, sulfuric acid, unknown wastes and cyanide wastes (TAMS, 1996 pg. 7).

In 1982, the Hazardous Waste Generator/Waste Transporter Annual report identified that 880 gallons of TCA and 800 pounds of PCBs were generated at the Court Street Facility and transported to the Electronics Park Facility's Hazardous Waste Storage Area for pick-up (TAMS, 1996 pg. 6).

In 1984, GE reported an average annual usage of 1,750 gallons of TCA (degreasing and cleaning) and disposal of 11,350 pounds of PCB-containing capacitors with no PCBs remaining on site (TAMS, 1996 pg. 8).

The Tarbell Road Facility utilized TCA in radar refurbishment operations in 1992. Specific quantities of TCA used at the Tarbell Road Facility were not documented (TAMS, 1998 pg.6). Oily debris wastes were also generated at the Tarbell Road Facility, composition and quantity are unknown (TAMS, 1998, pg. 7).

### ***East Molloy Road Facility***

The 1993 Industrial Chemical Survey for the East Molloy Road Facility estimated that on an annual basis the Facility used the following materials: 3,000 pounds of copper, 1,500 pounds of steel, 150 pounds of varnish, 500 gallons of paint, 200 pounds of welding material and 500 yards of flexible insulation (TAMS, 1996 pg. 6). Based on disposal records, a variety of chlorinated and non-chlorinated solvents were also used historically by the Facility.

In 1980, the East Molloy Road Facility prepared a Notification of Hazardous Waste Activity Form and a Hazardous Waste Permit Application for submittal to EPA. These documents identify the Facility as generating the following hazardous wastes: D001, D002, F001, F002, F003, F005, F017, F018, P049, P071, P102, U002, U013, U134, U159, U220, and U239.

GE provided copies of hazardous waste manifests for the disposal of hazardous wastes between 1985 and 1994 in its Section 104(e) response. Wastes disposed of by the East Molloy Road Facility during that time period included: waste petroleum naphtha, halogenated spent solvents, spirit varnish, mineral spirits with tetrachloroethene, lead contaminated solids and liquids, cadmium-contaminated solids, asbestos, transformers with PCB-contaminated oil, PCB-contaminated solids, and corrosive cleaning compounds (TAMS, 1996 pg. 8). According to GE, disposal records do not exist prior to 1980, and the disposal records from 1980 to 1984 could not be located (TAMS, 1996 pg. 14).

The primary wastes reportedly generated at the East Molloy Facility in 1993 included: scrap metal, wastewater, spent solvents, and grit blast material (TAMS, 1996 pg. 6).

### ***Electronics Park Facility***

TCE was used in Building EP-6 through 1982 and in Building EP-7 until 1978. Other chemicals used at the Facility included: TCA, PCE, toluene, xylene, cadmium, copper, lead, mercury, nickel, zinc oxide, arsenic, and beryllium (TAMS, 1996 pgs. 6-8).

According to a 1985 Industrial Chemical Survey, average annual usages of substances of concern consisted of: 130,000 pounds of lead, 140 pounds of arsenic, 4,900 pounds of cadmium, and 2,600 pounds of beryllium (TAMS, 1996 pg. 8).

PCBs were used at the Electronics Park Facility in power transformers and capacitors, lighting fixture ballasts, and electronic equipment (TAMS, 1996).

From approximately 1965 to 1980, GE operated a drum-storage facility in the western portion of the Electronics Park Facility which contained chemical wastes including spent halogenated and non-halogenated solvents. Hazardous wastes from the other facilities were transported to the Electronics Park Facility for centralized pickup by the disposal contractor starting around 1980. Also, approximately 1.6 acres of land on the northern corner of the site was used as a “compost and debris” area. Building EP-7A was used as a hazardous waste storage area until closure in 1993 (TAMS, 1996 pg.6).

The major waste streams at the Electronics Park Facility consisted of non-chlorinated solvents, lab-packed chemicals, flammable solid debris, oil debris and waste oil, lead contaminated solids and powder, paint and thinners, epoxy resin packs, chlorinated solvents (TCA and TCE), PCB-contaminated wastes, and “mercury debris” (TAMS, 1996 pg. 10).

Quantities of PCB wastes generated and disposed of prior to 1979 were not provided by GE (TAMS, 1996 pg. 6). Annual PCB inventories were provided from 1984 to 1990, including the hazardous waste manifests. According to a 1985 Industrial Chemical Survey, 20,000 pounds of PCBs used for dielectric fluid were stored or used on site (TAMS, 1996 pg. 7). In 1990, nearly 52,000 kgs of PCBs were removed from the site for final disposal and in 1992 nearly 56 tons of PCB-contaminated wastes were generated (TAMS, 1996 pgs. 7, 10).

### **3.3 Geology & Hydrogeology**

The surficial geology at the Court Street Facility, Tarbell Road Facility, East Molloy Road Facility and Electronics Park Facility were all influenced by the most recent glacial advance approximately 12,000 to 14,500 years ago. The broad flat-lying plains situated from Syracuse north to Lake Ontario were formed beneath Lake Iroquois and are characterized by lacustrine fine sand and silt deposits. Onondaga Lake and all its major tributaries lie within glacial meltwater channels and the sediment types characteristically found in meltwater channels are sands and gravels (TAMS 1996 & 1998, pg.2).

The bedrock of the greater Syracuse Area includes Lower to Middle Paleozoic age sedimentary rocks predominated by carbonate (dolostone and limestone), shale, sandstone, siltstone and evaporates (TAMS 1996 & 1998 pg.2).

### ***Court Street Facility & Tarbell Road Facility***

According to investigations done by IT Corporation and Wehran in 1991 and 1993, the soils at the Court Street Facility consist of moderately dense fine sand or silt with minor amounts of gravel in the uppermost two feet and then silts and clays below. IT Corporation measured the groundwater elevation in 1991, and determined it to be three to four feet below the ground surface. The data indicates that the groundwater flow is generally parallel to the slope of the topography to the north towards Sanders Creek and to the west towards the South Branch of Ley Creek (IT Corp., 1991).

No site investigations have been completed at the Tarbell Road Facility, but because of the close proximity to the Court Street Facility, it is assumed that similar soil conditions and groundwater depth exist.

### ***East Molloy Road Facility***

Soil conditions and groundwater data are unknown because no site investigations have been completed at the East Molloy Road Facility (TAMS, 1996 pg.3).

### ***Electronics Park Facility***

Malcolm Pirnie conducted a site investigation at the Electronics Park Facility in 1990 and classified the soil conditions as glaciolacustrine silty sands, glacial till, silt, sand and gravel deposits. Foundation drains and sumps exist throughout the sites which have been used to collect and control groundwater in and around subgrade structures at the facility. An artesian well was installed in the shale bedrock near Building EP-5 to relieve groundwater pressure on the building's foundation and to supply non-contact cooling water (TAMS, 1996 pg.4).

## **3.4 Surface Water Hydrology**

### ***Court Street Facility & Tarbell Road Facility***

Surface runoff from the Court Street Facility flows to the storm sewer system, to the South Branch of Ley Creek (western boundary), and to Sanders Creek (northern boundary). Sanders Creek discharges to the South Branch of Ley Creek at the northwest corner of the property, just upstream of Route 298 and joins the main branch of Ley Creek approximately 1,000 feet downstream of the site (TAMS, 1996 pg.3).

Storm water from the Tarbell Road Facility is discharged to a drainage ditch which flows to Sanders Creek, approximately 2,000 feet upstream of the South Branch of Ley Creek (TAMS, 1998 pg. 3).

### ***East Molloy Road Facility***

The East Molloy Road Facility is located approximately 250 feet northwest of the North Branch of Ley Creek. Surface water flows in a southeasterly direction towards the North Branch of Ley Creek which discharges into the main branch of Ley Creek approximately 4,000 feet downstream of the site (TAMS, 1996 pg. 3).

### ***Electronics Park Facility***

A storm sewer system conveys storm water and groundwater collected from drains and building sumps to both the West and Middle Branches of Bloody Brook. Surface flow from the eastern portion of the

site discharges to the Middle Branches of Bloody Brook, and flow from the western portion of the site discharges to the West Branch of Bloody Brook (TAMS, 1996 pg. 4).

### **3.5 Sanitary and Storm Sewer Systems and Permits**

#### ***Court Street Facility & Tarbell Road Facility***

Sanitary and process wastewaters were discharged from the Court Street Facility to the Ley Creek Sewage Treatment Plant from 1956 until the effluent was rerouted to the Syracuse Metropolitan Wastewater Treatment Plant around the late 1970s. Floor drains connected to the process or sanitary sewers at the Facility were reportedly located in boiler rooms, the manufacturing area of Building 5, the radar and sonar testing area of Building 5A, the photography lab, near air compressors, and in the machine shop in Building 2 (Wehran, July 1991).

In 1969, it was reported that significant wastewater discharges emanated from the Court Street Facility's plating room operations in Building 2, the aluminum brazing and aluminum finishing areas in Building 5, and the ceramic printing manufacturing operations and preparation area in Building B. (Weston, 1969 pg. A-76).

The plating operation in Building 2 used approximately 7 million gallons of water per month in 1969, generating wastewaters consisting mainly of rinse tank overflows discharging to the sanitary sewer through a collection sump located outside of the building (Weston, 1969 pg. A-76).

Wastewater discharged to the sanitary sewer from Building 5's aluminum brazing and aluminum finishing departments were estimated at 9 gallons per minute (gpm) while in production. Rinsewater and an occasional concentrated dump of aluminum finishing chemicals were discharged to a common floor trench before entering a sump located outside of Building 5 which discharged into Sanders Creek. A bypass sewer to discharge the contaminated wastewater to the sanitary/process sewer was constructed in 1968 (Weston, 1969 pg. A-76).

Wastewaters from the cleaning of ceramic pieces and from the preparation area in Building B were dumped to a sewer draining to Sanders Creek. GE was informed by Onondaga County that, although the amount of wastewater being discharged was minimal, it should be piped to the sanitary sewer to avoid potential pollution (Weston, 1969 pg. A-77).

The Court Street Facility's first industrial discharge permit was reportedly issued in 1971 by the Onondaga County Department of Drainage and Sanitation (Wehran, July 1991). The terms of the Facility's earliest discharge permit are not known.

In 1973, it was reported by Onondaga County that the majority of wastewater from GE's Court Street Facility continued to originate from the aluminum and steel cleaning process; copper, nickel and tin plating process; brazing operations; and cooling water discharge (O'Brien & Gere, 1973).

According to a 1977 New York State Hazardous Waste Survey, industrial process wastewater from the Court Street Facility consisted of degreasing solutions, chlorinated and non-chlorinated solvents, electroplating solutions and acid-cleaning solutions (TAMS, 1996 pg. 7).

A 1991 report describes the Facility's then existing industrial discharge permit as allowing for the discharge of sanitary wastewater, wastewater generated from processing photographic material, and the occasional discharge of cleaning water from a paint spray booth (maximum discharge of 500 gallons over a three month period) (Wehran, July 1991).

With respect to the Court Street Facility's storm sewer system, the property historically conveyed stormwater to the north (into Sanders Creek) and to the west (into the South Branch of Ley Creek). However, the stormwater sewer system at the Facility appears to have been divided between Buildings A to C and Buildings 2 to 5A.

Originally, the storm sewer system associated with Buildings A to C consisted of a series of catch basins around the buildings which connected to a common storm sewer line which headed north and discharged at an outfall on the south side of Sanders Creek (IT Corp., Nov. 1991). As explained below, Building A to C's original storm sewer system was removed and/or extensively modified in the 1990s following the discovery of extraordinary amounts of lead contained in raw material (i.e.,PZT) and sediments found throughout the system.

The storm sewer system for Buildings 2 through 5A originally flowed to five outfalls: Outfalls 001 through 004 discharged to Sanders Creek, and Outfall 005 discharged to the South Branch of Ley Creek (TAMS, 1996 pg. 9). Outfall 001 originally received stormwater from Buildings 2 through 5A; Outfalls 002 to 004 received stormwater from Building 5; and Outfall 5 received stormwater from Buildings 5 and 5A (GE Stormwater Permit Applications, Oct. 1992). The locations of these outfalls are shown in Figure 2. These five storm sewer outfalls were eventually rerouted to a single outfall (TAMS, 1996 pg.9). As explained below, this work was reportedly undertaken to prevent the infiltration of VOCs into catchbasins and clay tile piping which was being discharged to Sanders Creek and the South Branch of Ley Creek (EMCON, 1998).

At some point in time, likely in the early 1990s, the Court Street Facility obtained SPDES permit (NYR00A471) regulating its storm sewer discharges. However, the Facility discharged storm and some wastewater through its storm sewers in what would appear to be a largely unregulated fashion throughout the majority of the time in which manufacturing took place.

The Tarbell Road Facility discharged sanitary wastewater from Building 8 to the county sanitary sewer system for treatment at the Ley Creek Sewage Treatment Plant or, in later years, the Syracuse METRO WWTP. There was no indication that process wastewater was generated at the Tarbell Road Facility. Stormwater runoff from the Tarbell Road Facility was conveyed to a ditch via Outfall #001 and subsequently discharged to Sanders Creek (TAMS, 1998 pg.11). GE requested a stormwater discharge permit for the Tarbell Road Facility in 1992 (GE Stormwater Permit Application, Oct. 1992).

### ***East Molloy Road Facility***

Wastewater was generated at the East Molloy Road Facility on an intermittent basis during the steam cleaning of equipment and electrical apparatus. According to GE, wastewater was pretreated with an oil/water separator prior to the discharge to the Onondaga County sewer system. Prior to approximately 1980, wastewater was treated at Ley Creek Sewage Treatment Plant. In later years, wastewater was treated at the METRO WWTP (TAMS, 1996 pg. 7).

At some point in time, the East Molloy Road Facility was permitted for discharge to the sanitary sewers by the Onondaga County Department of Drainage and Sanitation, permit number unknown.

There were no reported stormwater discharges from the East Molloy Road Facility to the North Branch of Ley Creek (TAMS, 1996 pg. 11).

### ***Electronics Park Facility***

The Electronics Park Facility is not located within the Ley Creek Watershed; however, industrial and sanitary wastewater from the site was discharged to the Ley Creek Sewage Treatment Plant via the county sewer system from the mid-1940s until around the late 1970s when the effluent was rerouted to the Syracuse METRO WWTP. Operations generating process wastewaters from the Facility included the cleaning and preparing of parts, etching, plating, rinsing, and painting. These operations took place in Buildings 5, 6, 7, 9, and 15 (Weston, 1969 pg. A-81). Water usage at the site was estimated at 45 million gallons per month and the effluent flow constituted approximately 10 to 12 percent of the total influent flow to the Ley Creek Sewage Treatment Plant (Weston, 1969 pg. A-86).

The Electronics Park Facility was permitted at some point in time by the Onondaga County Department of Drainage and Sanitation. Permit #6 addressed the following discharges: sanitary wastewater; boiler blowdown water; Buildings EP-9 basement and EP-10 outdoor sumps water discharged from the Building EP-10 oil/water separator; filtered process wastewater from the Transducer Products Operations; wastewater from the fabrication of semiconductors and parts cleaning in Buildings EP-3 and EP-7; wastewater from the photographic laboratory; wastewater from the projection display products operations in Building EP-7; and wastewater from EP-5 operations and Building EP-6 sump water contaminated with low levels of TCE, the discharge of which was prohibited after 1993 (TAMS, 1996 pg.13).

A storm sewer system conveys stormwater and groundwater collected from foundation drains and building sumps from the Electronics Park Facility to both the West and Middle branches of Bloody Brook. Flow from the eastern portion of the system discharges to the Middle Branch of Bloody Brook and flow from the western portion of the site discharges to the West Branch of Bloody Brook (TAMS, 1996 pg. 4).

## **3.6 Composition and Volume of Sewer Discharges**

### ***Court Street Facility & Tarbell Road Facility***

According to the 1969 Industrial Discharges in the Ley Creek Sanitary District Report, the Court Street Facility discharged 200,000 gpd on average to the county sanitary sewers, including approximately 150,000 gpd of industrial wastewater (Weston, 1969, Table 1). According to the Weston Report, analysis of the wastewater samples collected from the plating room discharge to the sanitary sewer showed significant contamination (cyanides, chromium, copper, zinc, cadmium, nickel), especially with respect to cyanides. The Facility was estimated to be discharging 5.9 pounds of cyanide per day, 1.1 pounds of chromium, 1.0 pounds of nickel and smaller amounts of cadmium, copper, and zinc (Weston, 1969 Table 1). The cyanide discharge from the plating room amounted to a significant (27 percent of the peak value) portion of the cyanide in the Ley Creek Sewage Treatment Plant influent (Weston, 1969 pg. A-78).

Analysis of wastewater samples discharged from the Facility's aluminum brazing operations to the sanitary sewer detected copper, zinc, and nickel (Weston, 1969 pg. A-78). Analysis of wastewater samples from the aluminum finishing operations detected cyanide, chromium, copper, zinc, cadmium, and nickel (Weston, 1969 Table GECS-5 and GECS-6).

Wastewater from ceramic printing in Building B which was identified in 1969 as having been discharged to Sanders Creek was not analyzed because of low volume and infrequent occurrence; however, this wastewater was identified as a source of potential pollution (Weston, 1969 pg. A-77). The storm sewer system which serviced this Building was, in fact, later found to be highly contaminated with lead (see below).

In 1974, Onondaga County collected 21 wastewater grab samples and 7 composite samples from 14 locations around the Court Street Facility. Testing results identified the presence of cyanide, aluminum, cadmium, chromium, copper, iron, mercury, magnesium, manganese, nickel, lead, and zinc in some or all of the samples. The highest concentrations of lead (up to 279 mg/l) were detected in wastewater collected from Building C. Mercury, copper, iron, magnesium, and zinc were detected in each of the 28 samples analyzed (O'Brien & Gere, 1973).

Similar wastewater results were obtained in sampling completed by Onondaga County at the Court Street Facility in 1975 (O'Brien & Gere, 1975).

As part of phasing out operations at the Court Street Facility, GE began conducting environmental studies in the early 1990s. With respect to the Facility's process/sanitary sewer system, sediment sampling of the former plating room sump associated with Building 2 was found to contain TCLP cadmium above hazardous waste criteria (Wehran, 1992). An interior floor sump in Building 5 was also found to contain PCBs at 45 ppm (TAMS, 1996). It is not known, however, if testing was ever performed while or after the Facility was in operation to evaluate the extent to which PCBs may have been released into process/sanitary sewers discharging until the late 1970s to the Ley Creek Sewage Treatment Plant.

With respect to the Facility's storm sewer system, in the early 1990s GE determined that, because of the numerous discharge vents on the roof of Building B, runoff flowing into the storm sewer system servicing Buildings A to C may be contaminated with lead from air emissions associated with the manufacturing of ceramic parts (O'Brien & Gere, 1990). Testing confirmed that fugitive emissions of lead had occurred (roof lead levels on Building B up to 220,000 ppm), and lead was found in catch basins (up to 280,000 ppm), and outfall sediments (up to 57,000 ppm at the outfall serving catch basins near Sanders Creek) (O'Brien & Gere, Apr. 1991).

Sediments from the catch basins associated with Buildings A to C were removed and disposed of as hazardous waste. The catch basins were then plugged and taken out of service (O'Brien & Gere, Apr. 1991). Catch basins and storm sewer lines were later excavated and removed (with no new system apparently required to be installed due to the demolition of the three buildings) (IT Corp., Nov. 1991). During this excavation, suspected PZT residue was found in the former storm sewer system, although no test data of the excavated materials was included in the summary report (IT Corp., Nov. 1991).

With respect to the storm sewer system servicing Buildings 2 through 5A, in the early 1990s it was determined that significant releases of solvents had occurred from three primary source areas on the

property and solvents were being conveyed within the drainage pipes and/or bedding material associated with this storm sewer system. (EMCON, 1998). Remedial efforts consisted of removal of nearly 500 feet of existing drain pipe and replacement with PVC pipe, and removal of 20 cubic yards of potentially-contaminated soil and pipe sediment and 40 yards of uncontaminated overburden soils and asphalt (TAMS, 1996 pg. 20).

Additional storm sewer activities were reportedly undertaken in 1993 to eliminate groundwater infiltration in sections of the storm sewer not previously addressed. Testing performed in March of 1997 still detected 269 ppb of VOCs at Outfall OF-01 (discharging to Sanders Creek) and 44 ppb of VOCs at Outfall OF-02 (discharging to the South Branch of Ley Creek). As a result of this data, Outfall OF-01 was replaced with Outfall OF-01A and repair work was performed on Outfall OF-02. (EMCON, 1998).

The Tarbell Road Facility was only permitted for the discharge of sanitary wastewater from Building 8 to the County Sewer System. (TAMS, 1998 pg. 5). A stormwater sample collected at Outfall #1 from the Facility to Sanders Creek in 1992 detected copper, lead, mercury, and zinc. (TAMS, 1998, pg. 12).

### ***East Molloy Road Facility***

Wastewater from the East Molloy Road Facility was reportedly generated on an intermittent basis; when generated, average daily flow was approximately 1,000 gallons. Pretreatment of the wastewater included use of an oil/water separator prior to discharge to the public sewer system.

Four wastewater samples collected from analysis from the East Molloy Road Facility in 1992 detected oil and grease (150 mg/l maximum); phenolic compounds (0.13 mg/l maximum); cadmium (0.059 mg/l maximum); chromium (0.12 mg/l maximum); copper (6.5 mg/l maximum); lead (0.6 mg/l maximum); nickel (0.08 mg/l maximum); zinc (0.89 mg/l maximum); PCBs – Aroclor 1254 (0.2 ug/l maximum); and PCBs – Aroclor 1260 (1.9 ug/l maximum) (GE Section 104e Response).

Weekly monitoring of wastewater from the East Molloy Road Facility in March 1993, found the presence of low levels of PCBs (<2 ppb) and elevated pH (>9.5) in the effluent being discharged to the Onondaga County Sewer System (TAMS, 1996 pg. 14). As a result of the exceedances in 1993, in-line filtration and carbon adsorption were added as pretreatment processes necessary to meet the discharge criteria (TAMS, 1996 pg.7).

### ***Electronics Park Facility***

Sanitary and process wastewater generation at the Electronics Park Facility was estimated at 1.76 mgd in 1968 and samples were analyzed for: COD, pH, alkalinity or acidity, SS, VSS, oil and grease, total chromium, copper zinc, cadmium and nickel. The main contaminant observed in the process sewer was copper, which at the time of sampling was the result of a cupric chloride leak. The Facility was estimated to be discharging 26.7 pounds of copper per day, 98.8 pounds of oil & grease, and 3.6 pounds of zinc (Weston, 1969 Table 1). Low pH (values below 5.5) were also below the acceptable discharge values (Weston, 1969 pg. A-84).

In 1973, Onondaga County collected five wastewater samples from the Electronics Park Facility. Chemicals detected included cyanide, chromium, copper, mercury, magnesium, manganese, nickel, lead,

and zinc, with copper, lead, and zinc having the highest concentrations (O'Brien & Gere, 1973). Similar results were reported by Onondaga County in 1975 (O'Brien & Gere, 1975).

Elevated concentrations of TCE (650 ug/l maximum) were detected in samples of wastewater discharging to the sanitary sewer system from 1980 to 1983, with an average concentration of 200 µg/L. The source of contamination was determined to be from the basement sump in Building EP-7 which was pumping contaminated groundwater to the sanitary sewer system (TAMS, 1996 pg. 15). Samples collected in 1990 and 1991 also revealed elevated levels of TCE in sewer discharges with concentrations ranging from 83 to 270 ug/l (TAMS, 1996 pg. 21).

## 4.0 Documented Spills and Releases

### ***Court Street Facility & Tarbell Road Facility***

With respect to Buildings A to C, as a result of a series of GE investigations beginning in the early 1990s, it was determined that: 1) lead-containing PZT material had been released via fugitive air emissions onto roof buildings, into storm sewers and ultimately Sanders Creek, and onto surrounding soils; 2) sporadic historic disposal of PZT material, drums, and debris had occurred on the property; 3) PZT-related lead contamination found in areas remote from the buildings appeared to be associated with past disposal practices of some sort; 4) a substantial release of chlorinated solvents had occurred in one source area near Building B; and 5) a release of heating oil occurred from a tank located under one of the buildings (O'Brien & Gere, Apr. 1991 and Nov. 1991; IT Corp., Nov. 1991 (2 reports) and Dec. 1991; and Wehran, June 1992, Apr. 1993, and Aug. 1993). The impact of these historic releases on soil, groundwater, surface water and sediments is discussed in more detail below.

With respect to Buildings 2 through 5A, Wehran identified the following potential releases in its 1991 environmental study: 1) loading bays at Buildings 5 and 5A; 2) air discharge vents and storm sewers receiving roof drainage; 3) pipes protruding from walls of the buildings; 4) the sump which served the plating process area in Building 2; 5) the settling basin near the northwest corner of Building 5; 6) the former outdoor solvent storage pad near the northwest corner of Building 5; 7) the former underground solvent and gasoline storage tank areas and associated lines; and 8) the transformer areas (Wehran, July 1991).

23 underground storage tanks (USTs) were determined to have once been present at the Court Street Facility - 13 250-gallon solvent USTs, 9 fuel oil tanks and 1 gasoline tank. The solvent tanks were reportedly removed (no dates or specifics). Two 10,000 gallon fuel oil tanks were removed in 1987, with six of the remaining seven fuel tanks pressure tested to check for leaks, five of which failed. Upon retesting in January 1988, one additional tank passed. Four leaking tanks were reported to New York State Department of Environmental Conservation (NYSDEC) and are recorded as 8707498 and 8707546. In the spring of 1989, all fuel oil tanks were removed except one 8,000 gallon tank that passed the leak test (later removed in August of 1989)<sup>2</sup> (Wehran, July 1991).

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<sup>2</sup> During one of the tank excavations, a fire sprinkler water pipe was struck by the backhoe and went unnoticed. Overnight, the excavation filled with water, causing the tank to float and flip over, releasing some of the remaining oil in the tank into the excavation. This spill was recorded as NYSDEC spill 8900779 (Wehran, July 1991).

Prior to 1989, a total of 12 PCB-containing transformers were located outdoors near Buildings 2 and 5A, at the pumphouse near Building 5, and indoors in Building 5. These transformers were removed in 1989 and 1990 and transported to Buffalo, NY for decommissioning prior to disposal. Wehran's review of the Facility's PCB inspection and maintenance program found that the program for the PCB-containing units was sporadically implemented and leaks may have occurred in at least one of the units (Wehran, 1991 pg. 15).

Investigations completed by GE/Lockheed in the 1990s confirmed significant releases of hazardous substances associated with the foregoing USTs, as well as the former outdoor solvent storage pad and certain transformers (Wehran, June 1992 and Jan. 1994; EMCON, Apr. 1998). The impacts associated with these releases are discussed further below.

As part of the decommissioning of the Court Street Facility, GE's consultants also assisted in evaluating releases of hazardous substances within the interior of the various buildings. For instance, in 1992, it was reported that two oil spills were cleaned up in Building 2 where PCBs may have been used. The areas cleaned up were in the former machine shop. Following cleanup, concrete core samples were collected, with one sample containing PCBs at 2.3 ppm (Wehran, June 1992).

Also in 1992, five interior areas in Building 4 were identified for decontamination. Two oil spills involved PCB-containing oils. Oil was spilled from a transformer associated with equipment removed from the building. The oil contained PCBs at 31 ppm (Aroclor 1260), while oil-soaked carpet contained 27 ppm PCBs. Wipe testing on the floor found both Aroclor 1248 and 1254, leading to the conclusion that the transformer oil spills may not have been the source of PCBs on the floor (Wehran, June 1992).

In 1994, it was reported that two floor areas in Building 5 (equipment staging area and Vibraplain room) were cleaned and tested for PCBs. Oil from equipment in Building 5 was sampled and found to contain PCBs up to 79 ppm. Equipment with PCBs included a mill, jig borer, surface grinder, lathe, and file. Oil staining in the Vibraplane room was found to contain PCBs at 24 ppm (Wehran, Jan. 1994).

It is unknown if any investigations were undertaken to determine whether the oil and PCB releases found in various buildings at the Court Street Facility may have resulted in historic discharges to process, sanitary, or storm sewers. However, an interior floor sump in Building 5 was found to contain PCBs at 45 ppm, and 14 floor drains and sumps were eventually cleaned and tested, suggesting that such discharges may have occurred (TAMS, 1996; Action Tech. Serv., Mar. 1995).

The Tarbell Road Facility had no documented releases of hazardous substances; however, no environmental investigations are known to have ever been completed at the site (TAMS, 1998 pg. 9).

### ***East Molloy Road Facility***

In 1992, a 1,000 gallon underground storage tank (UST) was removed from the East Molloy Road Facility and observed to be leaking. The tank was used to collect materials recovered from an on-site oil/water separator (TAMS, 1996 pg. 10). However, given the location of this Facility, any releases from this UST would not be expected to have impacted Ley Creek.

### ***Electronics Park Facility***

The Electronics Park Facility is not located within the Ley Creek Watershed; therefore, spills and releases from the Facility are only of relevance to the Lower Ley Creek Subsite to the extent they historically resulted or potentially resulted in releases to on site process or sanitary sewers (see discussion in Section 3.6 above).

## 4.1 Soils

### ***Court Street Facility & Tarbell Road Facility***

As a result of the above-described spills and releases, soils at the Court Street Facility were historically impacted by lead, PCBs, SVOCs and VOCs such as 1,1-DCA and TCE, resulting or potentially resulting in releases to storm sewers, the South Branch of Ley Creek and Sanders Creek.

With respect to soils around Buildings A to C, a series of investigations were performed in the early 1990s to define the area and extent of lead-contaminated soil associated with the use of PZT in former ceramics manufacturing operations.<sup>3</sup> The investigations identified: 1) soils around the buildings which were extensively contaminated with lead (up to 32,000 mg/kg) from fugitive dust emissions; 2) lead-contaminated soils (up to 57,000 ppm) at the storm sewer outfall near Sanders Creek which serviced the buildings; and 3) elevated lead (up to 47,000 ppm) in areas remote from the buildings (e.g., near a drainage pipe on an adjacent property) believed to be associated with the historic dumping of fill or waste materials<sup>4</sup> (O'Brien & Gere, Apr. 1991; IT Corp., Nov. 1991; Wehran, Aug. 1993). Based on investigative findings, one consultant concluded that the most likely pathway for off-site lead transport was from over-land runoff and not leaching from soils and groundwater transport (Wehran, 1992).

GE prepared a Remedial Plan to excavate and dispose of soils contaminated with lead above 500 ppm (Wehran, June 1992). In 1993, over 5,000 tons of non-hazardous lead contaminated soil was excavated and removed from around the Buildings A to C area, along with 177 tons of hazardous lead soil (TAMS, 1996 pg. 16).

With respect to soils around Building 2 through 5A, subsurface investigations performed in 1992 reportedly indicated that chlorinated and aromatic VOC-contaminated soil (and groundwater) were present at the site, with primary source areas located along the western property boundary adjacent to

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<sup>3</sup> Soils in the Building A to C area were also found by GE to be contaminated with heating oil and chlorinated solvents (Wehran, Apr. 1993). VOC contamination, including TCE and 1,1-DCA were measured in surficial soils behind the former Buildings B and C in both the unsaturated and saturated soils. The zone of contamination was estimated at 10,000 square feet and extending to an average depth of 10 feet. Wehran recommended a pilot soil/groundwater treatment study consisting of soil-vapor extraction and groundwater pumping and/or air sparging; however, information regarding the performance results or the full-scale treatment system has not been found (Wehran, 1994).

<sup>4</sup> During site investigations and remedial activities, buried or partially buried drums were found, as well as buried bags of white and pink material and other assorted waste debris. Two areas of buried drums were found with drum material or surrounding soils containing high lead levels (up to 295,000 ppm) and low levels of volatile and semi-volatile organics such as tetrachloroethene (PCE), pyrene, phenanthrene, and fluoranthene. A drum and waste pile near Sanders Creek was disposed of as hazardous waste (O'Brien & Gere, Apr. 1991; IT Corp., Nov. 1991; Wehran, Aug. 1993).

Building 5 (and near the South Branch of Ley Creek). Three specific source areas were identified: 1) the location of the former solvent USTs; 2) the former solvent storage pad; and 3) an area adjacent to a former metal shed located on the south side of Building 5. (EMCON, Apr. 1998). TCE was also found in soil along the banks of the South Branch of Ley Creek at 500 ppm (TAMS, 1996).

Remedial measures performed or proposed to be performed to address solvent contamination around Buildings 5 and 5A (aside from the prior removal of the solvent USTs and associated soils), included additional soil removal undertaken in 1992, as well as the installation of collection trenches parallel to the northern and western boundaries of the site to prevent the migration of solvents from soils and groundwater into Sanders Creek and the South Branch of Ley Creek. (EMCON, Apr. 1998).

Soils surrounding transformers near Building 5A were tested in 1995 and found to have PCBs up to 27 ppm (TAMS, 1996 pg. 18). Impacted soils were excavated and disposed. (Action Tech. Ser., Mar. 1995).

According to Lockheed Martin, no environmental investigations have taken place at the Tarbell Road Facility; therefore no analytical data is available (TAMS, 1998 pg. 9). However, it is possible that historic fugitive emissions from Buildings B and C could have impacted the Tarbell Road Facility because of the close proximity (approximately 700 feet) across Route 298 (TAMS, 1998 pg. 10).

#### ***East Molloy Road Facility***

Two soil samples were collected at the East Molloy Road Facility during the removal of a leaking UST reportedly used to store materials recovered from an on-site oil/water separator. A low level of TCA was detected in one of the samples (TAMS, 1996 pg. 10). Given the location of this Facility, any soil contamination associated with this UST would not be expected to have impacted Ley Creek.

#### ***Electronics Park Facility***

The Electronics Park Facility is not located within the Ley Creek Watershed; therefore any soil contamination associated with this Facility is only of relevance to the Lower Ley Creek Subsite to the extent it historically resulted or potentially resulted in releases to on site process or sanitary sewers (see discussion in Section 3.6 above).

### **4.2 Groundwater**

#### ***Court Street Facility & Tarbell Road Facility***

With respect to groundwater in and around Buildings 2 through 5A, investigations by Wehran in 1992 reportedly concluded that the above-described chlorinated and aromatic VOC contamination (1,1-DCA; 1,1-DCE; 1,1,1-TCA, vinyl chloride, toluene, ethylbenzene and xylene) was primarily limited to shallow groundwater, with the highest levels in the shallow wells installed in the vicinity of the former UST area and former solvent storage pad area. It was also concluded that contaminated groundwater was being transported via the Facility's storm sewer system to the South Branch of Ley Creek and Sanders Creek (see Section 3.6 for a discussion of interim measures completed). A Remedial Action Plan was developed in 1993 to address VOC-contaminated groundwater through the installation of a collection trench to be constructed parallel to the northern and western boundaries of the site. No information has been reviewed about the installation and operation of this collection trench system. However, it is

clear that there was no hydraulic control of contaminated groundwater for upwards of 25 years before the collection trench was proposed.

With respect to groundwater in and around Buildings A to C, in 1991, six monitoring wells were installed and developed around these buildings by IT Corporation. Analytical results from two sampling events found elevated levels of 1,2-DCE (840 and 1,400 ppb) and TCE (540 and 810 ppb) located east of the former Building C. Investigations also found two potential VOC sources down gradient of Building B (TAMS, 1996 pg. 16). However, according to Wehran, the VOCs from Buildings B and C did not likely impact Sanders Creek based on the absence of TCE and DCE in wells between the contaminated area and the creek (Wehran, 1992).

Groundwater investigations have not been done at the Tarbell Road Facility.

#### ***East Molloy Road Facility***

Groundwater investigations have not been completed at the East Molloy Road Facility; therefore, the potential for groundwater contamination is unknown. A leaking underground storage tank was removed from the site in 1992, with one groundwater sample collected and analyzed from the tank excavation reporting low concentrations of TCA, DCA, and xylenes (TAMS, 1996 pg. 11). However, given the location of this Facility, any groundwater contamination associated with this UST would not be expected to have impacted Ley Creek.

#### ***Electronics Park Facility***

The Electronics Park Facility is not located within the Ley Creek Watershed; therefore, any groundwater contamination associated with this Facility is only of relevance to the Lower Ley Creek Subsite to the extent it historically resulted or potentially resulted in releases to on site process or sanitary sewers (see discussion in Section 3.6 above).

### **4.3 Surface Water**

#### ***Court Street Facility & Tarbell Road Facility***

With respect to the lead contamination documented to have been released from Buildings A to C into Sanders Creek, no surface water data has been found for review.

With respect to VOC contamination documented to have been released from the Building 2 to 5A area into Sanders Creek and the south Branch of Ley Creek, surface water testing was undertaken by GE and Lockheed in 1993 and 1997. The 1993 sampling event reportedly indicated the presence of TCE (up to 5 ppb) both upstream and downstream of the site. Similar results were obtained in 1997. The consultant concluded that groundwater discharge to the creek was not impacting surface water quality at that time (EMCON, Apr. 1998).

#### ***East Molloy Road Facility***

Based on its location, the East Molloy Road Facility had no known direct discharges into surface waters of the North Branch of Ley Creek (TAMS, 1996 pg. 11).

### ***Electronics Park Facility***

The Electronics Park Facility is not located within the Ley Creek Watershed; therefore the Facility had no direct discharges into surface waters of Ley Creek.

## **4.4 Sediment Sampling**

### ***Court Street Facility & Tarbell Road Facility***

With respect to lead releases from Buildings A to C into Sanders Creek, stream sediment samples collected in 1991 ten feet upstream of GE's outfall contained lead at 60 ppm, while a sample collected 10 feet downstream of the outfall detected lead at 110 ppm (the sample at the outfall was 94 ppm) (O'Brien & Gere, Apr. 1991). In a later sampling event as part of the cleanup project, lead was detected at 10,300 ppm in sediment near the Facility's outfall to Sanders Creek, 1,290 ppm where the outfall effluent formed an eddy with Sanders Creek, and 741 ppm downstream in Sanders Creek (IT Corp., Nov. 1991).

With respect to VOC releases from the Building 2 to 5A area into Sanders Creek and the South Branch of Ley Creek, sediment samples were collected and analyzed for VOCs by EMCON in 1997. At the South Branch, chloroethane was detected at 11 ppb in an upstream sample and 21 ppb in a downstream sample, while 1,1-DCA was detected at 10 ppb in an upstream sample and 22 ppb in a downstream sample. In Sanders Creek only trace levels (estimated concentrations below detection levels) were identified in both the upstream and downstream samples (EMCON, Apr. 1998).

The New York State Department of Environment and Conservation (NYSDEC) also conducted limited sediment sampling in the North and South Branch of Ley Creek and Sanders Creek in 1996. Volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), metals and PCBs were detected in the sediment samples adjacent to the Court Street Facility in the South Branch and Sanders Creek. VOCs, SVOCs and metals were also detected in the North Branch of Ley Creek. Select constituents of concern (COCs) are shown on figures 4-6 in appendix A.

### ***East Molloy Road Facility***

Based on its location, the East Molloy Road Facility had no known direct discharges that would have impacted sediments in the North Branch of Ley Creek (TAMS, 1996 pg. 11).

### ***Electronics Park Facility***

The Electronics Park Facility is not located within the Ley Creek Watershed; therefore the Facility had no direct discharges that would have impacted sediments in Ley Creek.

## **5.0 Conclusions**

Hazardous substances for which there have been documented releases from the former GE/Lockheed Facilities into the Ley Creek Watershed include, but are not limited to: chlorinated solvents (TCE, TCA and degradation products), non-chlorinated solvents (BTEX), metals (chromium, copper, zinc, cadmium, nickel, mercury, magnesium, lead, manganese), cyanide, phenol, oil and grease containing VOCs and SVOCs, and PCBs. Based on available evidence, General Electric and/or Lockheed Martin's nexus to Lower Ley Creek includes: 1) discharges, spills, and releases of the aforementioned hazardous

substances from the facilities into soil, groundwater, and storm sewers migrating or discharging into Ley Creek; and 2) sanitary sewer discharges containing hazardous substances to the former Ley Creek STP which date back to the 1940s and would have resulted in discharges of hazardous substances to Lower Ley Creek.

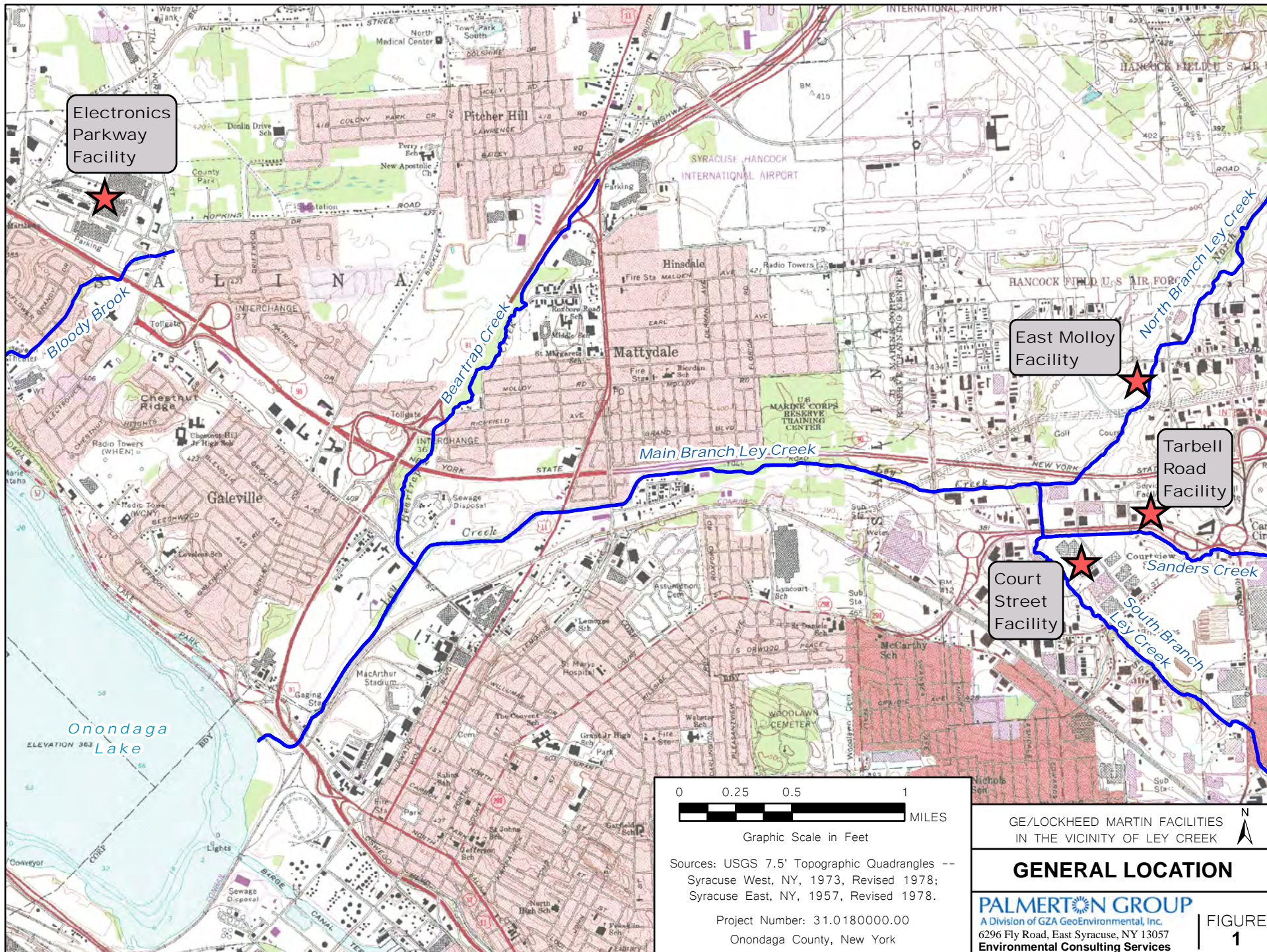
Available sediment, surface water, and soil data collected at the Lower Ley Creek Subsite, including within the Old Ley Creek Channel, identify the presence of the majority of the above-listed hazardous substances which have been documented at the GE/Lockheed Facilities and may have been, directly or indirectly discharged, spilled or released into Lower Ley Creek. These substances include: TCA, TCE, and related degradation products; SVOCs such as benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene; metals such as cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc; phenol; cyanide; and PCBs.

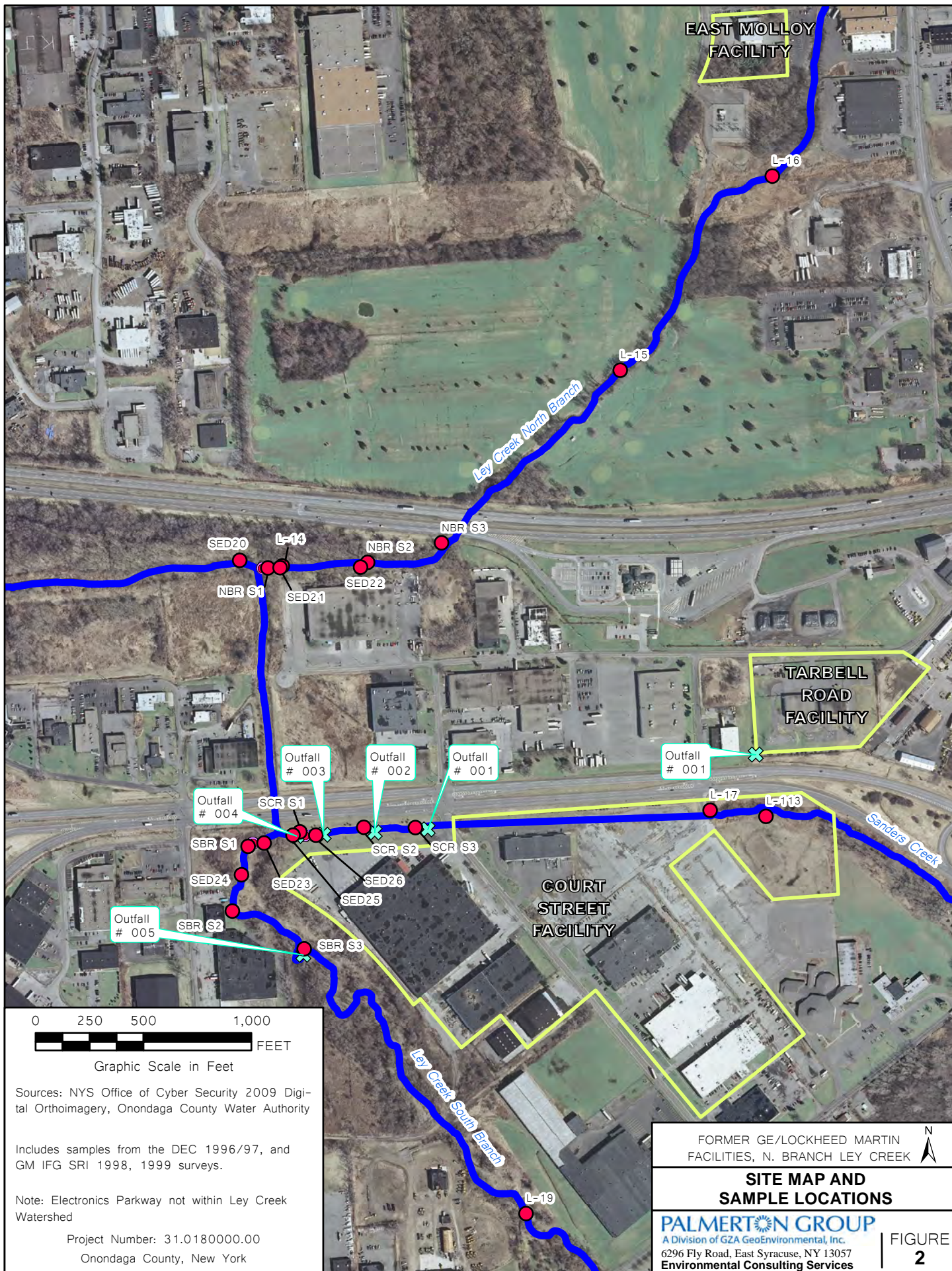
General Electric and Lockheed Martin should be given notice by the USEPA of their potential liability at the Lower Ley Creek Subsite and included in any future negotiations between the agency and PRPs.

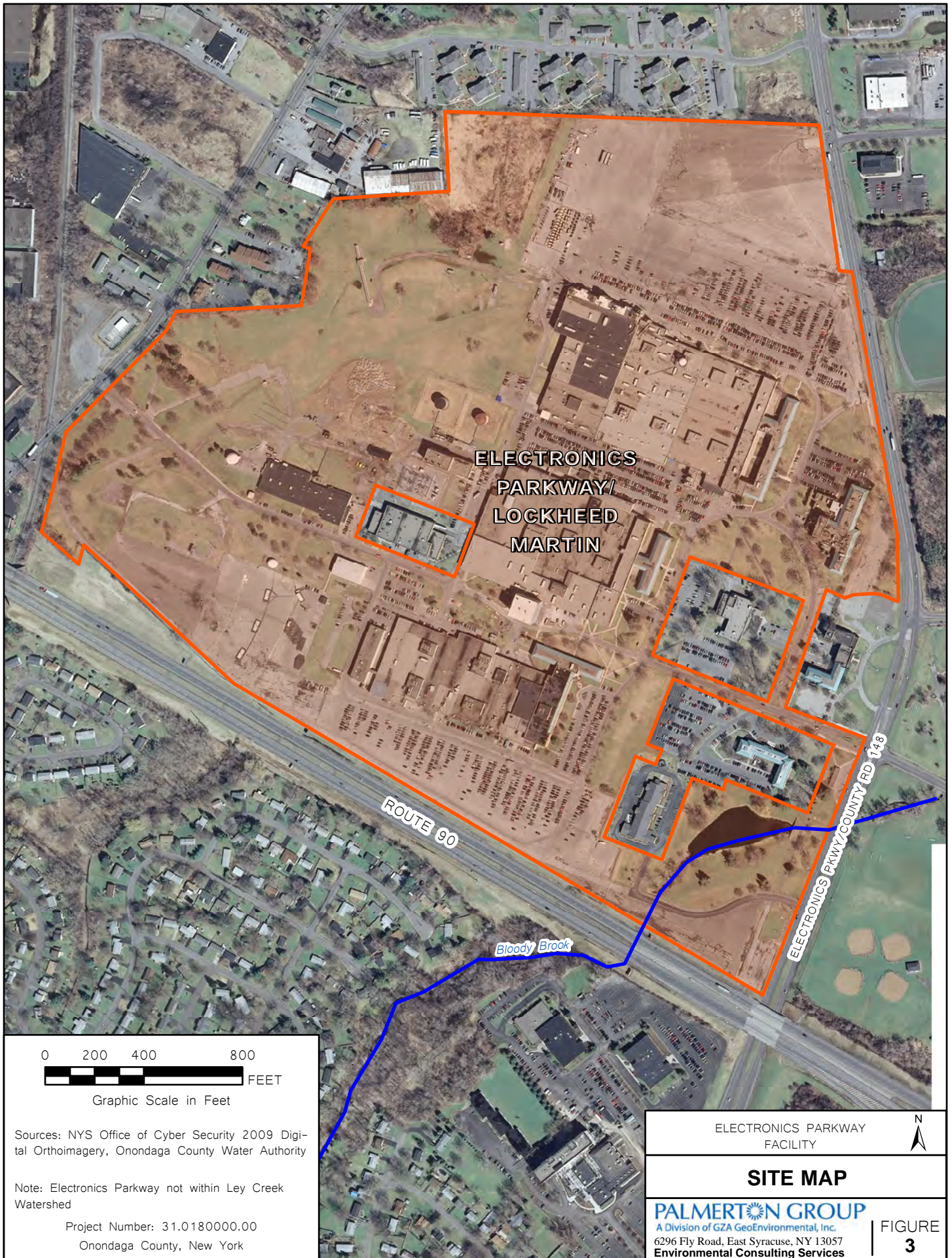
## 6.0 References

Information found in this report has been summarized from the Court Street Facility, Tarbell Road Facility, East Molloy Road Facility and Electronics Park Site Summary Reports (SSR) prepared by TAMS in 1996 and 1998, facility information publicly available on USEPA's website, and select reports and other records obtained from Onondaga County and the NYSDEC. The information found in the SSR reports was originally obtained from the CERCLA Section 104(e) responses of Lockheed Martin and General Electric Site IDs (209, 211, 212 & 214) as well as supplemental information from the NYSDEC. Additional information on the GE/Lockheed Facilities may be available from the companies, Onondaga County, NYSDEC, USEPA, and possibly litigation files relating to the facilities. Copies of relevant documents used in the report are provided on CD.

## **Appendix A**







0 200 400 800  
FEET  
Graphic Scale in Feet

Sources: NYS Office of Cyber Security 2009 Digital Orthoimagery, Onondaga County Water Authority

Note: Electronics Parkway not within Ley Creek Watershed

Project Number: 31.0180000.00  
Onondaga County, New York

ELECTRONICS PARKWAY  
FACILITY

## SITE MAP

**PALMERTON GROUP**  
A Division of GZA GeoEnvironmental, Inc.  
6296 Fly Road, East Syracuse, NY 13057  
Environmental Consulting Services

FIGURE  
3

Confluence of North & South Branches

Value (ug/kg)	Parameter	Depth (in)
21000   1900	Acenaphthene	0 - 6   6 - 12
130 J	Acenaphthylene	6 - 12
25000   3700 J	Anthracene	0 - 6   6 - 12
50000 J   7600 J	Benzo(a)pyrene	0 - 6   6 - 12
66000 J   11000 J	Benzo(b)fluorant hene	0 - 6   6 - 12
36000 J   5600 J	Benzo(g,h,i)perylene	0 - 6   6 - 12
20000 J   3700 J	Benzo(k)fluorant hene	0 - 6   6 - 12
59000 J   10000	Chrysene	0 - 6   6 - 12
11000 J   1900 J	Dibenz(a,h)anthracene	0 - 6   6 - 12
130000   26000	Fluoranthene	0 - 6   6 - 12
18000   2300	Fluorene	0 - 6   6 - 12
34000 J   5500 J	Indeno(1,2,3-cd)pyrene	0 - 6   6 - 12
130000   27000	Phenanthrene	0 - 6   6 - 12
130000 J   23000	Pyrene	0 - 6   6 - 12

South Branch Ley Creek,  
Downstream of GE Outfall

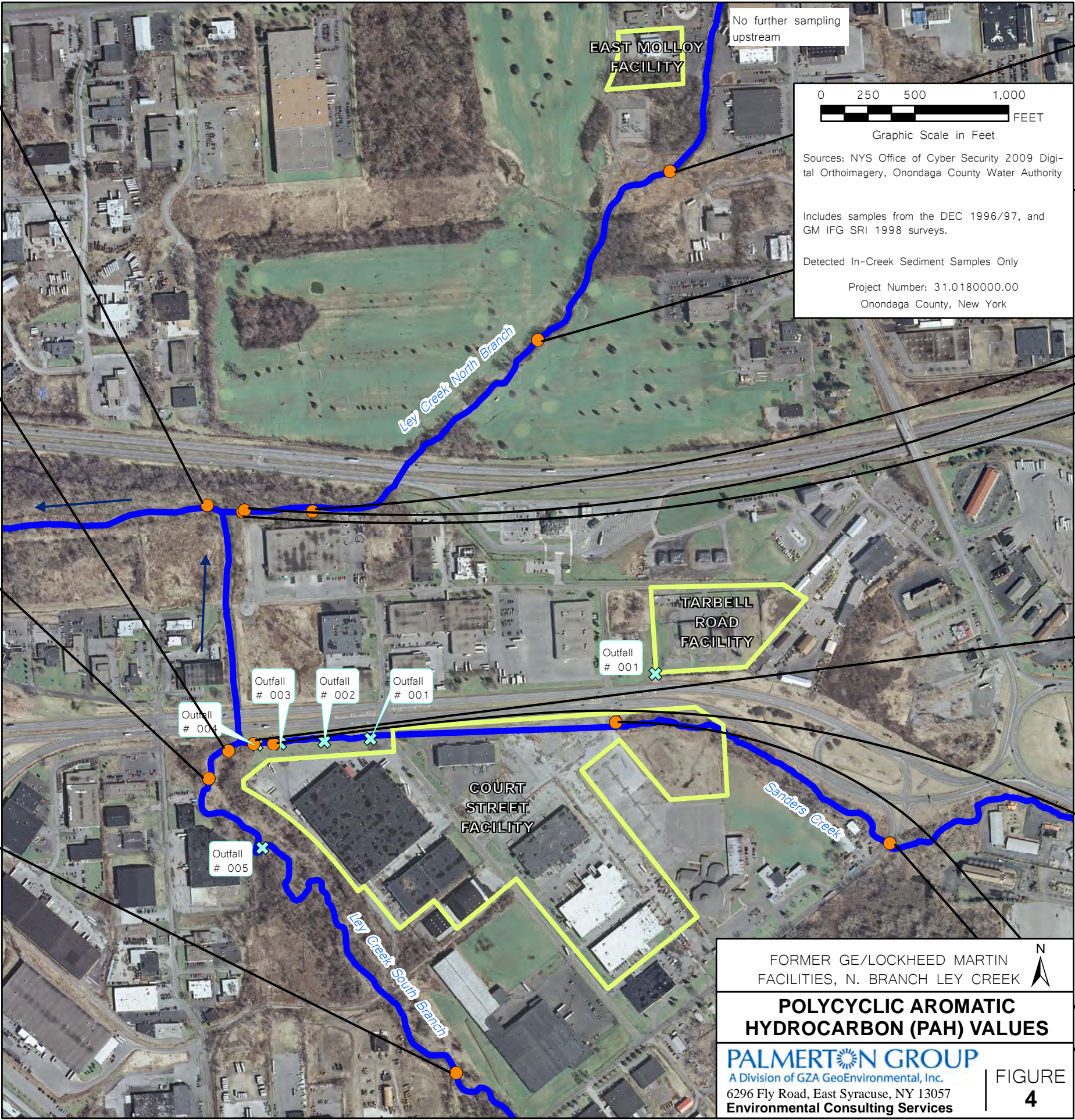
360 J	Acenaphthene	0 - 6
150 J	Acenaphthylene	0 - 6
930 J	Anthracene	0 - 6
3500 J	Benzo(a)pyrene	0 - 6
4800 J	Benzo(b)fluorant hene	0 - 6
2200 J	Benzo(g,h,i)perylene	0 - 6
1500 J	Benzo(k)fluorant hene	0 - 6
4100 J	Chrysene	0 - 6
760 J	Dibenz(a,h)anthracene	0 - 6
7200	Fluoranthene	0 - 6
490	Fluorene	0 - 6
2100 J	Indeno(1,2,3-cd)pyrene	0 - 6
4400	Phenanthrene	0 - 6
8400 J	Pyrene	0 - 6

500	Acenaphthene	0 - 6
230 J	Acenaphthylene	0 - 6
1100 J	Anthracene	0 - 6
5600 J	Benzo(a)pyrene	0 - 6
7900 J	Benzo(b)fluorant hene	0 - 6
4900 J	Benzo(g,h,i)perylene	0 - 6
2700 J	Benzo(k)fluorant hene	0 - 6
6300 J	Chrysene	0 - 6
1300 J	Dibenz(a,h)anthracene	0 - 6
11000	Fluoranthene	0 - 6
600	Fluorene	0 - 6
4300 J	Indeno(1,2,3-cd)pyrene	0 - 6
6800	Phenanthrene	0 - 6
15000 J	Pyrene	0 - 6

South Branch Ley Creek,  
Upstream of GE Outfall

370 J	Acenaphthylene	0 - 11
1400	Acenaphthene	0 - 11
1500	Fluorene	0 - 11
12000 D	Phenanthrene	0 - 11
2200	Anthracene	0 - 11
15000 D	Fluoranthene	0 - 11
13000 D	Pyrene	0 - 11
7500 D	Chrysene	0 - 11
5300 D	Benzo(b)fluorant hene	0 - 11
3500	Benzo(a)pyrene	0 - 11
3000	Indeno(1,2,3-cd)pyrene	0 - 11
2800	Benzo(g,h,i)perylene	0 - 11

Qualifiers  
J - Value is an estimation.  
D - Reported value is from a secondary dilution. This qualifier is informational and does not affect data quality.



North Branch Ley Creek

Value (ug/kg)	Parameter	Depth (in)
96 J	Fluoranthene	0 - 11
99 J	Pyrene	0 - 11
58 J	Chrysene	0 - 11
69 J	Benzo(b)fluorant hene	0 - 11
52 J	Benzo(k)fluorant hene	0 - 11
46 J	Benzo(a)pyrene	0 - 11
49 J	Indeno(1,2,3-cd)pyrene	0 - 11
56 J	Benzo(g,h,i)perylene	0 - 11

220 J	Phenanthrene	0 - 11
50 J	Anthracene	0 - 11
370 J	Fluoranthene	0 - 11
320 J	Pyrene	0 - 11
170 J	Chrysene	0 - 11
130 J	Benzo(b)fluorant hene	0 - 11
130 J	Benzo(k)fluorant hene	0 - 11
140 J	Benzo(a)pyrene	0 - 11
100 J	Indeno(1,2,3-cd)pyrene	0 - 11
110 J	Benzo(g,h,i)perylene	0 - 11

No samples detected	0 - 6
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79 J	Fluoranthene	0 - 9
77 J	Pyrene	0 - 9

55 J   61 J	Acenaphthene	0 - 6   6 - 12
110 J   89 J	Anthracene	0 - 6   6 - 12
670 J   330 J	Benzo(a)pyrene	0 - 6   6 - 12
1100 J   470 J	Benzo(b)fluorant hene	0 - 6   6 - 12
570 J   220 J	Benzo(g,h,i)perylene	0 - 6   6 - 12
370 J   190 J	Benzo(k)fluorant hene	0 - 6   6 - 12
800 J   380 J	Chrysene	0 - 6   6 - 12
160 J	Dibenz(a,h)anthracene	0 - 6
1200   810	Fluoranthene	0 - 6   6 - 12
70 J   51 J	Fluorene	0 - 6   6 - 12
510   300 J	Indeno(1,2,3-cd)pyrene	0 - 6   6 - 12
760   490	Phenanthrene	0 - 6   6 - 12
1600 J   1100 J	Pyrene	0 - 6   6 - 12

Sanders Creek, Downstream of GE Outfalls

310 J	Acenaphthene	0 - 6
520	Anthracene	0 - 6
1400 J	Benzo(a)pyrene	0 - 6
2100 J	Benzo(b)fluorant hene	0 - 6
1100 J	Benzo(g,h,i)perylene	0 - 6
660 J	Benzo(k)fluorant hene	0 - 6
1700 J	Chrysene	0 - 6
160 J	Dibenz(a,h)anthracene	0 - 6
2900	Fluoranthene	0 - 6
260 J	Fluorene	0 - 6
74 J	Indeno(1,2,3-cd)pyrene	0 - 6
2800	Phenanthrene	0 - 6
4500 J	Pyrene	0 - 6

1900	Acenaphthene	0 - 6
68 J	Acenaphthylene	0 - 6
2700	Anthracene	0 - 6
6800 J	Benzo(a)pyrene	0 - 6
9100 J	Benzo(b)fluorant hene	0 - 6
4800 J	Benzo(g,h,i)perylene	0 - 6
3100 J	Benzo(k)fluorant hene	0 - 6
8100 J	Chrysene	0 - 6
1400 J	Dibenz(a,h)anthracene	0 - 6
15000	Fluoranthene	0 - 6
1800	Fluorene	0 - 6
4500 J	Indeno(1,2,3-cd)pyrene	0 - 6
17000	Phenanthrene	0 - 6
20000	Pyrene	0 - 6

Sanders Creek, Upstream of GE Outfalls

No samples detected	0 - 3
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41 J	Fluoranthene	0 - 10
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Confluence of North & South Branches

Value (mg/kg)	PCB Aroclor	Depth (In)
0.16	Aroclor-1248	0 - 6
0.27	Aroclor-1260	0 - 6
0.066	Aroclor-1248	6 - 12
0.067	Aroclor-1260	6 - 12

Sanders Creek, Downstream of  
GE Court St. Facility Outfalls

0.65	Aroclor-1260	0 - 6
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0.178	Aroclor-1260	0 - 6
No samples detected		6 - 12

1.3	Aroclor-1260	0 - 6
-----	--------------	-------

0.86	Aroclor-1260	0 - 6
No samples detected		6 - 12

No samples detected		0 - 6   6 - 12
---------------------	--	----------------

South Branch Ley Creek

0.061	Aroclor-1248	0 - 6
0.025	Aroclor-1260	0 - 6

0.0665 J	Aroclor-1254	0 - 6
No samples detected		6 - 12

0.098	Aroclor-1248	0 - 6
0.063	Aroclor-1260	0 - 6

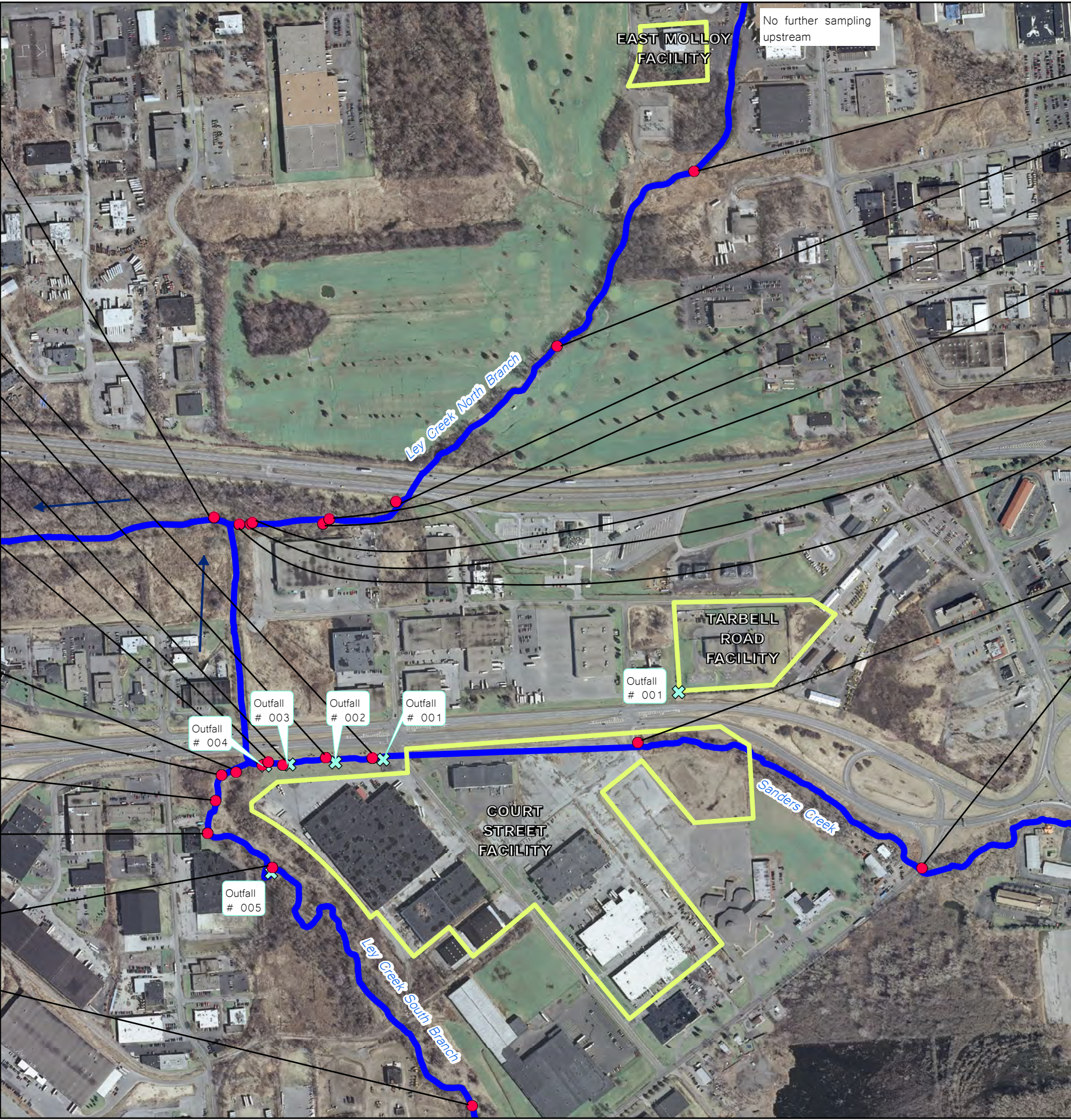
0.103	Aroclor-1248	0 - 6
0.071	Aroclor-1254	0 - 6
0.0744	Aroclor-1248	6 - 12

0.0968 J	Aroclor-1248	0 - 6
0.109	Aroclor-1248	6 - 12

0.072 PJ	Aroclor-1242	0 - 11
0.23	Aroclor-1254	0 - 11
0.1	Aroclor-1260	0 - 11

Qualifiers

J - Value is an estimation.  
P - There is greater than a 25% difference in detected concentrations between 2 GC (Gas Chromatograph) columns; lower value reported



North Branch Ley Creek

Value (mg/kg)	PCB Aroclor	Depth (In)
No samples detected		0 - 11

No samples detected		0 - 11
---------------------	--	--------

No samples detected		0 - 6   6 - 12
---------------------	--	----------------

No samples detected		0 - 6   6 - 12
---------------------	--	----------------

0.093	Aroclor-1260	0 - 6
-------	--------------	-------

0.045	Aroclor-1260	0 - 6
0.031	Aroclor-1248	6 - 12
0.079	Aroclor-1260	6 - 12

No samples detected		0 - 9
---------------------	--	-------

No samples detected		0 - 6   6 - 12
---------------------	--	----------------

Sanders Creek, Upstream of  
GE Court St. Facility Outfalls

No samples detected		0 - 3
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0.016 J	Aroclor-1260	0 - 10
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02505001,000

FEET

Graphic Scale in Feet

Sources: NYS Office of Cyber Security 2009 Digital Orthoimagery, Onondaga County Water Authority

Includes samples from the DEC 1996/97, GM IFG SRI 1998 and 1999 surveys.

Detected In-Creek Sediment Samples Only

Project Number: 31.0180000.00  
Onondaga County, New York

FORMER GE/LOCKHEED MARTIN  
FACILITIES, N. BRANCH LEY CREEK

**POLYCHLORINATED  
BIPHENYL VALUES**

**PALMERTON GROUP**  
A Division of GZA GeoEnvironmental, Inc.  
6296 Fly Road, East Syracuse, NY 13057  
Environmental Consulting Services

FIGURE  
5

Confluence of North & South Branches		
21.7	Lead	0 - 6
17.8	Lead	6 - 12

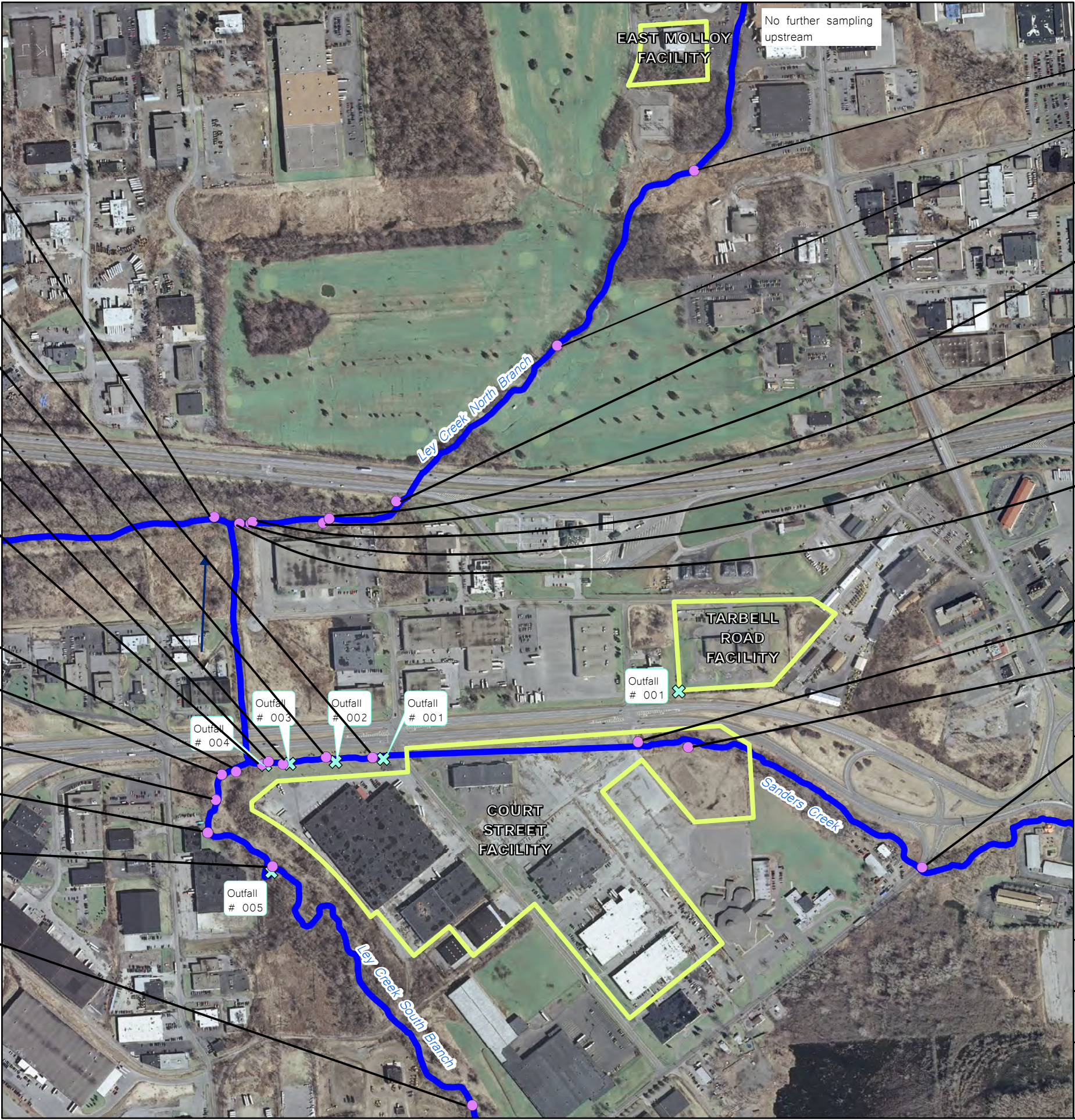
Sanders Creek, Downstream of GE Court St. Facility Outfalls		
34.3	Lead	0 - 6
15.6	Lead	0 - 6
12.5	Lead	6 - 12

105	Lead	0 - 6
28.7	Lead	0 - 6
12	Lead	6 - 12
23.3	Lead	0 - 6
10.4	Lead	6 - 12

South Branch Ley Creek		
42.9	Lead	0 - 6
49.2	Lead	0 - 6
10.8	Lead	6 - 12
57.4	Lead	0 - 6
41.6	Lead	0 - 6
78.2	Lead	6 - 12
56.1	Lead	0 - 6
63.2	Lead	6 - 12
40.3 EN*J	Lead	0 - 11

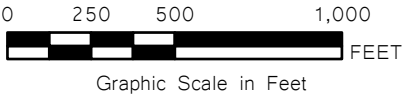
**Qualifiers**

J – Value is an estimation.  
 E – True value greater than indicated value.  
 N – Presumptive evidence of presence of analyte; analyte may not meet all criteria for compound identification.  
 \* – Indicates duplicate analyses not within the control limits.



North Branch Ley Creek		
6.8 EN*J	Lead	0 - 11
57.7 EN*J	Lead	0 - 11
21.8	Lead	0 - 6
5.5	Lead	6 - 12
3.7	Lead	0 - 6
3.4	Lead	6 - 12
9.7	Lead	0 - 6
6.5 EN*J	Lead	0 - 9
9.1	Lead	0 - 6
10.7	Lead	6 - 12
10	Lead	0 - 6
9.2	Lead	6 - 12

Sanders Creek, Upstream of GE Court St. Facility Outfalls		
15.8 EN*J	Lead	0 - 3
26.3	Lead	0 - 24
5.2 EN*J	Lead	0 - 10



Sources: NYS Office of Cyber Security 2009 Digital Orthoimagery, Onondaga County Water Authority

Includes samples from the DEC 1996/97, and GM IFG SRI 1998 and 1999 surveys.

Detected In-Creek Sediment Samples Only

Project Number: 31.0180000.00  
 Onondaga County, New York

FORMER GE/LOCKHEED MARTIN  
 FACILITIES, N. BRANCH LEY CREEK

### LEAD VALUES

**PALMERTON GROUP**  
 A Division of GZA GeoEnvironmental, Inc.  
 6296 Fly Road, East Syracuse, NY 13057  
 Environmental Consulting Services

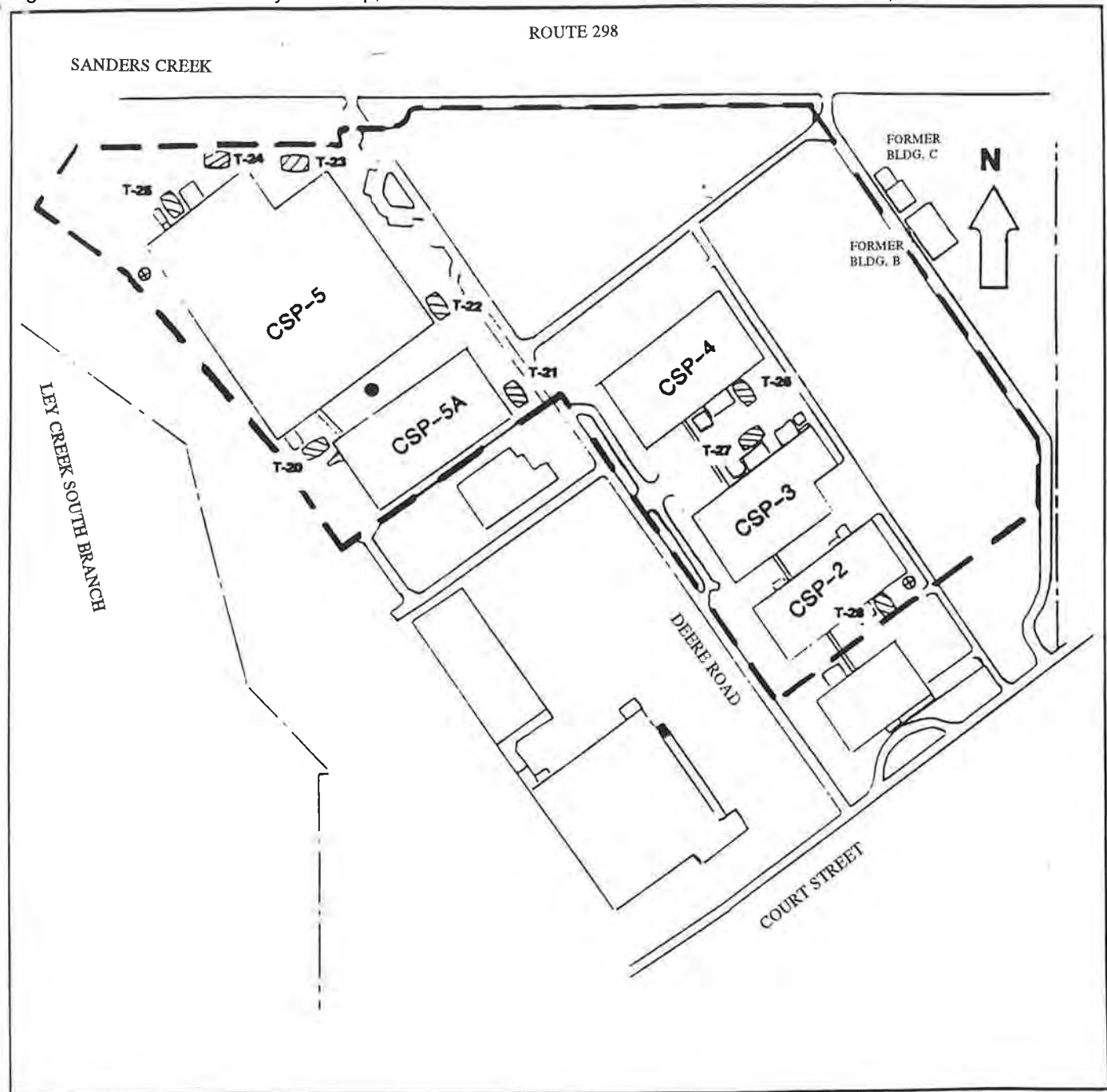
Table 1. Former GE/Lockheed Martin Facilities, N. Branch Ley Creek, Metals of Concern Values

		Sample ID	L-16	L-15	NBR S3A	NBR S3B	NBR S2A	NBR S2B	SED22	L-14	SED21	SED21	NBR S1A
Parameter	Units	Depth	0 - 11 In.	0 - 11 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.	0 - 9 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.
Arsenic	mg/kg		10.4 *J	2.9 *J	4.8	5.1	3.9	4	13.7	13.5 *J	4.7	8.3	8.2
Cadmium	mg/kg		0.15 B	0.24 B	6.1					0.26 B			
Chromium	mg/kg		6.5 N*J	7.6 N*J	28.1	6.4	4.3	4.3	20 J	7.9 N*J	6.9 J	8.3 J	21.9
Copper	mg/kg		9.7 *	12.3 *		14.9	7.9	7.5	24.2	14.4 *	26.1	13.7	20.3
Lead	mg/kg		6.8 EN*J	57.7 EN*J	21.8	5.5	3.7	3.4	9.7	6.5 EN*J	9.1	10.7	10
Nickel	mg/kg		6.2 BEN*J	6.8 BEN*J	6.3	7.1		5.6	15.6	8.2 BEN*J			23.1
Zinc	mg/kg		48.3 E*J	54.4 E*J	36.6	39.9	24	22.7	60.6	40.9 E*J	47.2	40.4	47.5
Mercury	mg/kg												

		Sample ID	NBR S1B	SED20	SED20	L-18	L-17	SCR S3A	SCR S3B	SCR S2A	SCR S2B	SED26	SCR S1A
Parameter	Units	Depth	6 - 12 In.	0 - 6 In.	6 - 12 In.	0 - 10 In.	0 - 3 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.	0 - 6 In.
Arsenic	mg/kg		8.8	5.9	11.3	14.6 *J	19.1 *J	7.7	6.2	6.2	7.9	13	18.8
Cadmium	mg/kg		1.1						1.2				
Chromium	mg/kg		27.5	17.1 J	12.1 J	14.2 N*J	21.7 N*J	23.8	20.2	26.7	22.1	45.6 J	22.6
Copper	mg/kg		23.3	22.1	34.1	20.6 *	25.6 *	27.8	26.6	31.7	24.6	79.7	28.7
Lead	mg/kg		9.2	21.7	17.8	5.2 EN*J	15.8 EN*J	23.3	10.4	28.7	12	105	15.6
Nickel	mg/kg		24.9	11.5	13	17.3 EN*J	33.8 EN*J	27.5	26.6	19.7	30.1	24	26.7
Zinc	mg/kg		53.7	91.4	53.3	39.2 E*J	77.4 E*J	57.2	55.4	134	58.3	257	74.6
Mercury	mg/kg									0.098			

		Sample ID	SCR S1B	SED25	SED23	SBR S1A	SBR S1B	SED24	SBR S2A	SBR S2B	SBR S3A	SBR S3B	L-19
Parameter	Units	Depth	6 - 12 In.	0 - 6 In.	0 - 6 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.	0 - 6 In.	6 - 12 In.	0 - 6 In.	6 - 12 In.	0 - 11 In.
Arsenic	mg/kg		9.2	9.6	3.7	4.8	11	3.4	18.3	11.5	6.4	6.9	5.4 *J
Cadmium	mg/kg						1.1			2	1.4 J	1.6	0.47 B
Chromium	mg/kg		22.3	26.1 J	14.1 J	16.5	20.9	21.2 J	18.6	29.2	24.2	24.6	23.5 N*J
Copper	mg/kg		25.9	28.3	29.3	69.2	27.2	55.9	54.3	72.9	58.8 J	64.2	57.5 *
Lead	mg/kg		12.5	34.3	42.9	49.2	10.8	57.4	41.6	78.2	56.1	63.2	40.3 EN*J
Nickel	mg/kg		29.4	19.1	11.4	16.7	27.1	13.2	17.5	17.4	19	213	22.6 EN*J
Zinc	mg/kg		56.4	98.1	97.4	161	56.8	158	179	114	187	427	
Mercury	mg/kg					0.15			0.15		0.14	0.092	0.09 B*

Figure 7: Court Street Facility Site Map, from Wehran's Envirotech's Phase I Site Assessment, 1991.



— — — Limit of Study Area

T-28  Former Location - Fuel Oil UST

⊕ Former Location - Solvent UST

● Former Location - Gasoline UST

Drawing not to scale.

SOURCE: GENERAL ELECTRIC INDUSTRIAL PARK PLOT PLAN

FIGURE 2

STUDY AREA

GENERAL ELECTRIC COURT STREET FACILITY  
DE WITT, NEW YORK

